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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/058,495	01/28/2002	Richard King	265280-68002	2189

23643 7590 12/28/2007  
BARNES & THORNBURG LLP  
11 SOUTH MERIDIAN  
INDIANAPOLIS, IN 46204

EXAMINER
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RAMANA, ANURADHA

ART UNIT	PAPER NUMBER
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3733

MAIL DATE	DELIVERY MODE
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12/28/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/058,495	<b>Applicant(s)</b> KING ET AL. <span style="float: right;">CT</span>	
	<b>Examiner</b> Anu Ramana	<b>Art Unit</b> 3733	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10/31/07.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 49, 50, 52, 125, 126, 128 and 129 is/are pending in the application.
- 4a) Of the above claim(s) 53, 54, 130 and 131 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 49, 50, 52, 125, 126, 128 and 129 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on October 31, 2007 has been entered.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 49, 50, 52, 125-126, 128 and 129 are rejected under 35 U.S.C. 103(a) as being unpatentable over Devanathan et al. (US 5,645,594) in view of McKellop et al. (US 6,165,220).

Devanathan et al. disclose an acetabular cup or "implantable orthopedic prosthesis" or "laminar composite bearing" having multiple layers formed by compression molding under pressure and temperature wherein during molding the polymer (PMMA) melts and forms an inter-penetrating polymer network or "melt-fused" interface (Fig. 2 and col. 2, lines 10-65).

Devanathan et al. disclose all elements of the claimed invention except for an irradiated crosslinked polymer layer.

McKellop et al. teach irradiating the bearing surface of a UHMWPE cup using e-beam irradiation to produce gradient cross-linking on its bearing or articulating surface for wear resistance (col. 7, lines 25-67, col. 8, lines 1-29 and col. 9, lines 19-31).

Accordingly it would have been obvious to one of ordinary skill in the art at the time the invention was made to have irradiated the articulating surface of the Devanathan et al. bearing with e-beam irradiation, as taught by McKellop et al., to produce gradient cross-linking on its articulating surface for wear resistance.

### ***Response to Arguments***

Applicant's arguments submitted under "REMARKS" in the response filed October 31, 2007 have been fully considered but are not persuasive for the following reasons.

It is the Examiner's position that Applicants' invention is rendered obvious by the product of the combination of Devanathan et al. and McKellop et al. The Examiner reiterates that McKellop et al. teach the desirability of crosslinking any surface, which is susceptible to wear due to moving contact with another surface (e.g., in a sliding, pivoting, or rotating relationship to one another (col. 5, lines 5-16). It is the Examiner's position that McKellop et al. provide a strong motivation for crosslinking the bearing surface, i.e., the concave inner surface, of Devanathan et al.

It is also the Examiner's position that when the bearing surface of the Devanathan et al. multi-layer acetabular cup is exposed to radiation, the resulting product would have a cross-linked layer near the surface exposed to radiation followed by a layer crosslinked to a lesser or different degree or not crosslinked at all since exposure to radiation would not crosslink the entire thickness of the acetabular cup. McKellop et al. recognize this by stating that "the implant may be exposed to the e-beam in several passes (col. 7, lines 31-32)."

Regarding Applicants' arguments that the combination of Devanathan et al. and McKellop et al. would destroy the intended purpose of Devanathan et al., the Examiner notes that Devanathan et al. add PMMA to reduce creep problems widely experienced with polyethylene cups (col. 1, lines 30-33). It is the Examiner's position that even if

crosslinking were to extend into layer 14, it would not destroy the bearing for its intended use since there is an additional layer 16 beyond layer 14. Further, the Examiner cannot find any evidence that some cross-linking of PMMA would negatively impact the creep properties of polyethylene.

Regarding Applicants' arguments at the bottom of page 8, "if one were to attempt.....on the other side of the interface (i.e., into Devanathan's layer 14)," it is noted that some amount of crosslinked polymer would also be present on the other side of the interface in Applicants' bearing due to intermixing of the layers during compression molding.

Therefore, it is the Examiner's position that the product of the combination of Devanathan et al. and McKellop et al. is equivalent to Applicants' claimed invention.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anu Ramana whose telephone number is (571) 272-4718. The examiner can normally be reached Monday through Friday between 8:00 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eduardo Robert can be reached at (571) 272-4719. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.


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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AR

December 24, 2007

  
ANURADHA RAMANA  
PRIMARY EXAMINER  
TECHNOLOGY CENTER 3700